



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/705,203	11/02/2000	Hsin-Hsin Chou	56073USA5A.002	4516

7590 08/14/2002  
Robert J Pechman  
Office of Intellectual Property Counsel  
3M Innovative Properties Company  
P O Box 33427  
St Paul, MN 55133-3427

EXAMINER

KAO, CHIH CHENG G

ART UNIT PAPER NUMBER

2882

DATE MAILED: 08/14/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/705,203

Applicant(s)

CHOU ET AL

Examiner

Glen Kao

Art Unit

2882

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 15 May 2002.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 4-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 8-10, 20 and 21 is/are allowed.
- 6) ☒ Claim(s) 4-7, 11-19 and 22-24 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 November 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 6. 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Information Disclosure Statement*

1. The information disclosure statement filed January 22, 2002, fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each U.S. and foreign patent; each publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein has not been considered.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 4-7, 12-15, 17-19, and 22-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Horikx et al. (WO 98/17083) in view of Stevens et al. (US Patent 5910706) and Kawano et al. (JP 11-006905).

Horikx et al. discloses an information display (Page 1, lines 6-7) comprising: a plurality of light emitting devices (LEDs) (Page 6, lines 25-26) such as electroluminescent (EL) (Page 1, line 6) or organic EL (Page 1, lines 13-20) emitting light through a transmissive layer (Fig. 3, #2) between a frustrator element comprising a volume diffuser with particles (Fig. 3, #28) and the light emitting devices (Fig. 3, #3, 5, and 7) or

Art Unit: 2882

in another embodiment having the frustrator element (Fig. 4, #28) between the light emitting devices (Fig. 4, #3, 5, and 7) and the transmissive layer (Fig. 4, #34).

However, Horikx et al. does not seem to specifically disclose independent LEDs, an antireflective element, and voids in a diffusive surface which are microstructured prismatic structures orientated towards or away from the transmissive layer.

Stevens et al. teaches independent LEDs (Fig. 9a and 9b) and an antireflective element (Fig. 3f, #16). Kawano et al. teaches voids (Fig. 1, #11) in a diffusive surface (Fig. 1, #10) which are microstructured prismatic structures (Fig. 1, #11) orientated towards or away from the transmissive layer (Fig. 1, #12). Note that the orientation is just based on how one may perceive the structure as orientated in relation to another element.

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have the independent LEDs of Stevens et al. with the voids in the diffusive surface which are microstructured prismatic structures of Kawano et al. with the device of Horikx et al., which is explained with motivation as follows.

Regarding the LEDs, it would have been within routine skill in the art to substitute the LEDs of Stevens et al. with the light emitting devices of Horikx et al., since they considered functionally equivalent in that they are both light sources for displays. One would be motivated to have the independent light sources of Stevens et al. to place in small areas for high resolution displays as shown by Stevens et al. (Abstract) for a viewer to discern more detail compared to a low resolution display.

Art Unit: 2882

Regarding the antireflective element, one would be motivated to use the antireflection element "to enhance a transmission of light" as shown by Stevens et al. (Claim 7), which is tailored to the wavelength of the light emitted to improve outcoupling of emitted light as suggested by Stevens et al. (col. 9, lines 20-30), the opposite of reflection or antireflection.

Regarding the voids in the diffusive surface which are microstructured prismatic structures, one would be motivated to have these voids or structures orientated towards the transmissive layer to improve light transmissivity from the transmissive layer to the viewer as shown by Kawano et al. (Abstract, Problem to be Solved). The structures can be orientated towards or away from the transmissive layer, as long as the light can go through the structures or voids for the improvement in light transmissivity as desired and shown by Kawano et al. (Fig. 2). The voids or structures of Kawano et al. can be interpreted either way as being orientated towards or away from the transmissive layer. Lastly, if the voids or structures of Kawano et al. are substituted into the diffusing element of Horikx et al. in Figure 4, the structures are oriented towards and away from a transmissive layer.

3. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Horikx et al. in view of Stevens et al.

Horikx et al. discloses an information display (Page 1, lines 6-7) comprising: a plurality of light emitting devices (LEDs) Page 6, lines 25-26) such as electroluminescent (EL) (Page 1, line 6) or organic EL (Page 1, lines 13-20) emitting light through a

Art Unit: 2882

transmissive layer (Fig. 3, #2) between a frustrator element comprising a volume diffuser with particles (Fig. 3, #28) and the light emitting devices (Fig. 3, #3, 5, and 7).

However, Horikx et al. does not seem to specifically disclose independent LEDs.

Stevens et al. teaches independent LEDs (Fig. 9a and 9b).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have the independent LEDs of Stevens et al. with the device of Horikx et al., since it would have been within routine skill in the art to substitute the LEDs of Stevens et al. with the light emitting devices of Horikx et al., since they considered functionally equivalent in that they are both light sources for displays. One would be motivated to have the have the independent light sources of Stevens et al. to place in small areas for high resolution displays as shown by Stevens et al. (Abstract) for a viewer to discern more detail compared to a low resolution display.

4. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Horikx et al. in view of Stevens et al. and Kawano et al. as applied to claim 4 above, and further in view of Stevens et al. (EP 0814642 A1).

Horikx et al. in view of Stevens et al. (US) and Kawano et al. suggest a device as recited above.

However, Horikx et al. does not seem to specifically disclose phosphor-based LEDs.

Stevens et al. (EP) teaches phosphor-based LEDs (Abstract).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have the phosphor based LEDs of Stevens et al. (EP) with the suggested device of Horikx et al. in view of Stevens et al. (US) and Kawano et al., since phosphor-based LEDs and EL LEDs are considered functionally equivalent structures as show by Stevens et al. (EP) (col. 1, lines 10-20). It would have only involved routine skill in the art to substitute one type of LED for another. One would be motivated to use phosphor-based LEDs for use in ultra high resolution miniature display systems as shown by Stevens et al. (EP) (col. 1, lines 3-9) for even better discernment of display details for the user while miniaturizing to save monitor space.

### ***Response to Arguments***

5. Applicant's arguments with respect to claims 5-7 and 11-17 have been considered but are moot in view of the new ground(s) of rejection.

### ***Allowable Subject Matter***

6. The indicated allowability of claim 4 is withdrawn in view of the newly discovered reference to Kawano et al. Rejections base on the newly cited reference(s) are as recited above.

7. Claims 8-10, 20, and 21 are allowed.

Regarding claim 8, prior art does not specifically disclose or fairly suggest a volume diffuser further comprising louvers disposed to inhibit-cross-talk of light between separate light emitting devices, in combination with all the limitations in the claim.

Art Unit: 2882

### ***Conclusion***


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Glen Kao whose telephone number is (703) 605-5298. The examiner can normally be reached on M-Th (8 am to 5 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim can be reached on (703) 305-3492. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



gk  
August 9, 2002



ROBERT H. KIM  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800